Claims

1. A method for determining the coordinates of an arbitrarily shaped pattern on a surface in a deflector system, **characterized in that** the method comprises the steps of:

a) selecting a reference clock signal (lambda/2) that defines a movement in a first direction (X),

b) providing a micro sweep that repeatedly scans the surface in a second direction (Y), perpendicular to the first direction (X)

c) selecting a measurement clock signal (SOS) that is related to the signal used to start each micro sweep in the second direction (Y),

d) adjusting the speed of the movement in the first direction (X) to determine the distance between the start of each micro sweep,

e) performing a first run that include the steps of:

e1) starting a first micro sweep at a starting position,

e2) detecting at least one edge of the arbitrarily shaped pattern when the pattern is moved in the first direction (X) relative the deflector system,

e3) generating at least one event if the edge of the pattern is detected, and

e4) counting the number of micro sweeps performed until each event is generated, and

f) calculating the coordinate of the edge, for each event, in the first direction (X) using the number of performed micro sweeps.

2. The method according to claim 1, wherein more than one run as defined in step e) is performed and for each run the

starting position in step e1) is randomly selected, thereby generating randomly distributed micro sweeps between each run.

3. The method according to claim 2, wherein an average value of the edge is calculated in step f) to increase the accuracy of the patterns coordinate in the first direction.

4. The method according to any of claims 1-3, wherein said the selected reference signal in step a) contains the known position of the system in the first direction (X).

5. The method according to claim 4, wherein said selected reference signal in step a) is divided into intervals, where each interval preferably corresponds to a lambda/2 period, and the selected measurement clock signal in step c) have a period that corresponds to 8-10 scans of the pattern in each interval.

6. The method according to any of claims 1-5, wherein the method comprises a compensation for an azimuth error introduced when the micro sweep scans the surface in the second direction (Y) during movement of the surface in the first direction (X).

7. The method according to claim 6, wherein said compensation is a constant compensation.

8. The method according to any of the preceding claims, wherein the determination of coordinates of the arbitrarily shaped pattern also includes the determination of the coordinate in the second direction (Y) using as a reference signal: the signal used to start each micro sweep in the second direction, and as a measurement signal: a pixel clock signal.

9. The method according to any of claims 1-8, wherein said method is adapted to be used in a laser lithography system or an e-beam lithography system.

10. A method for determining the coordinates of an arbitrarily shaped pattern in a deflector system, **characterized in that** the method comprises the steps of: moving the pattern in a first direction (X), calculating the position of the edge of the pattern by counting the number of micro sweeps, performed in a perpendicular direction (Y), until the edge is detected, and determining the coordinates by relating the number of counted micro sweeps to the speed of the movement of the pattern.

11. The method according to claim 10, wherein the speed of movement of the pattern is correlated with the number of micro sweeps performed.

12. The method according to any of claims 10-11, wherein the pattern is scanned several times, so called runs, and an off-set in the first direction (X) for the first micro sweep is randomly selected for each run.

13. The method according to claim 12, wherein the position of the edge is obtained from an average value from all runs.

14. Software used in a deflector system for determining the coordinates of an arbitrarily shaped pattern in a deflector system, **characterized in that** the software facilitate the execution of the method as defined in claim 1 or claim 10.

Abstract

The present invention relates to a method for determining the coordinates of an arbitrarily shaped pattern in a deflector system. The method basically comprises the steps of: moving the pattern in a first direction (X), calculating the position of the edge of the pattern by counting the number of micro sweeps, performed in a perpendicular direction (Y), until the edge is detected, and determining the coordinates by relating the number of counted micro sweeps to the speed of the movement of the pattern. The invention also relates to software implementing the method.